**Small Business Innovation Research/Small Business Tech Transfer**

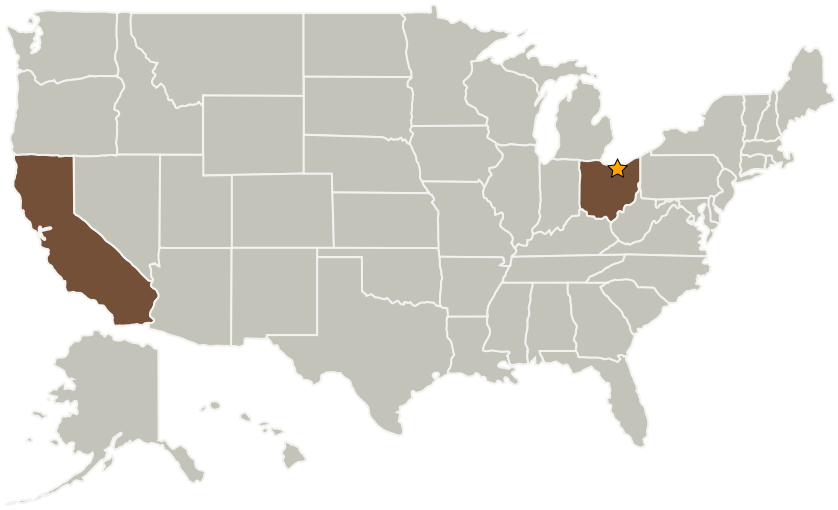
# Si/SiC Hybrid Structures Technologies for Micropropulsion Systems, Phase I

Completed Technology Project (2004 - 2005)

## Project Introduction

Propulsion systems that provide high power to weight and minimal mass are required for the planned generation of nanospacecraft and nanosatellites. Power-MEMS can provide a low cost, highly scalable production approach to small power systems as well as distributed power systems. However, to achieve the desired efficiencies from the MEMS operating temperatures need to exceed the structural temperature limit of silicon. In conjunction with the MIT Micro-Engine program, many of the technologicalissues for the incorporation of a refractory reinforcement, such as silicon carbide, have already been addressed. Selective deposition of the silicon carbide is believed to address the last remaining processing issues for fabricating selectively reinforced Si/SiC hybrid wafers.

## Primary U.S. Work Locations and Key Partners



| Organizations Performing Work | Role | Type | Location |
|---|---|---|---|
| ★Glenn Research Center(GRC) | Lead Organization | NASA Center | Cleveland, Ohio |
| Hyper-Therm High-Temperature Composites | Supporting Organization | Industry | Huntington Beach, California |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## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Center / Facility:**

Glenn Research Center (GRC)

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

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Completed Technology Project (2004 - 2005)

| Primary U.S. Work Locations | |
|---|---|
| California | Ohio |

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

Wayne S Steffier

## Technology Areas

**Primary:**

- TX14 Thermal Management Systems
  - TX14.1 Cryogenic Systems
    - TX14.1.3 Thermal Conditioning for Sensors, Instruments, and High Efficiency Electric Motors